



# Voice-Controlled Home Automation

## Aim:

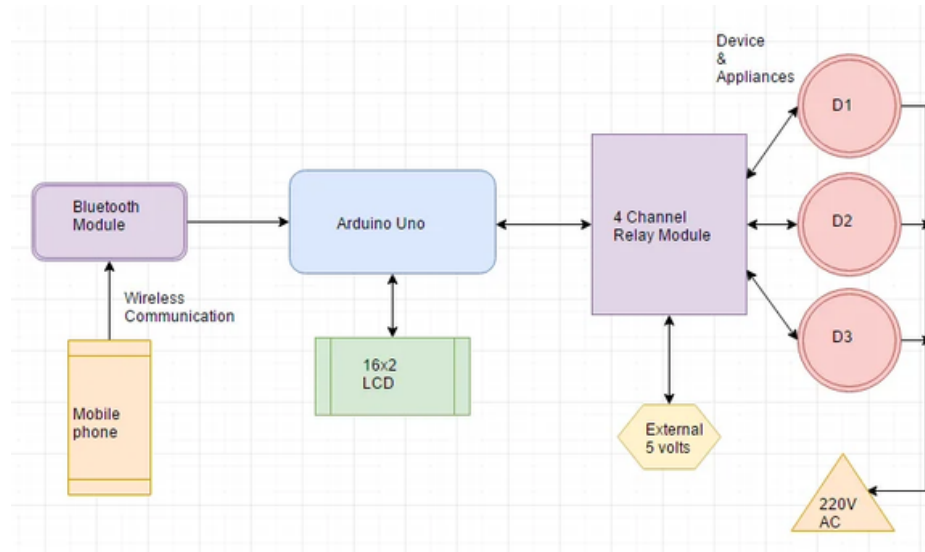
develop a smart home automation system that allows users to control electrical appliances using voice commands

## Components:

- **Microcontroller** (Arduino, ESP8266, ESP32, Raspberry Pi)
- **Voice Recognition Module** (e.g., Google Assistant, Alexa, or an offline module like Elechouse V3)
- **Relay Module** (to switch AC appliances on/off)
- **Wi-Fi Module** (ESP8266/ESP32 for IoT-based control)
- **Smartphone or Computer** (for voice processing)
- **Power Supply** (5V for the microcontroller, 230V for appliances)



# How does Voice Control Home Automation Work?



## Working Voice Controlled Home Automation using Arduino

we will use an android smartphone that will connect to our Arduino development board. So, make sure you have an android phone at hand.

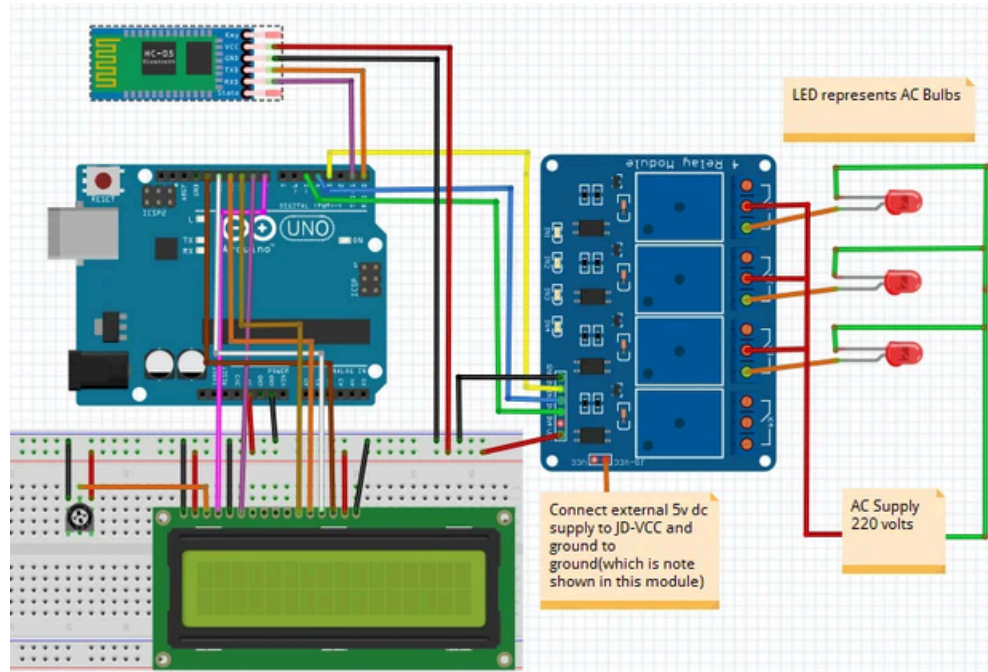
Go to the Play Store and download the application by the name: AMR\_Voice.

Open the application and speak the specified commands. The application sends the command to Bluetooth which is then received by Arduino which performs the described task. At the same time, the Arduino displays the status of the appliances on the LCD.

For demonstration purposes, we will use different colored bulbs: white, blue, and green.

Each command has its unique operations which are defined in code. You can change the commands according to your ease. Below is the list of commands that the user will speak to control the bulbs.

# Connection Diagram of Voice Controlled Home Automation



## Voice Controlled Home Automation System Arduino Code

```
void Check_Protocol(char  
    inStr[]) {  
    int i = 0;  
    int m = 0;  
    Serial.println(inStr);
```

```
if (!strcmp(inStr, "*white on#")) {  
    digitalWrite(white, LOW);  
    Serial.println("White ON");  
    lcd.setCursor(4, 1);  
    lcd.print("ON ");  
    for (m = 0; m < 11; m++) {  
        inStr[m] = 0;  
    }  
    i = 0;  
}  
if (!strcmp(inStr, "*white off#")) {  
    digitalWrite(white, HIGH);  
    Serial.println("White OFF");  
    lcd.setCursor(4, 1);  
    lcd.print("OFF ");  
    for (m = 0; m < 11; m++) {  
        inStr[m] = 0;  
    }  
    i = 0;  
}  
if (!strcmp(inStr, "*blue on#")) {  
    digitalWrite(blue, LOW);  
    Serial.println("Blue ON");  
    lcd.setCursor(8, 1);  
    lcd.print("ON ");  
    for (m = 0; m < 11; m++) {  
        inStr[m] = 0;  
    }  
}
```

```
i = 0;
}
if (!strcmp(inStr, "*blue of#")) {
    digitalWrite(blue, HIGH);
    Serial.println("Blue OFF");
    lcd.setCursor(8, 1);
    lcd.print("OFF ");
    for (m = 0; m < 11; m++) {
        inStr[m] = 0;
    }
    i = 0;
}
if (!strcmp(inStr, "*green on#")){
    digitalWrite(green, LOW);
    Serial.println("Green ON");
    lcd.setCursor(12, 1);
    lcd.print("ON ");
    for (m = 0; m < 11; m++) {
        inStr[m] = 0;
    }
    i = 0;
}
if (!strcmp(inStr, "*green of#")) {
    digitalWrite(green, HIGH);
    Serial.println("Green OFF");
    lcd.setCursor(12, 1);
    lcd.print("OFF ");
    for (m = 0; m < 11; m++) {
        inStr[m] = 0;
    }
}
```

```
i = 0;  
}  
else {for (m = 0; m < 11; m++) {  
  inStr[m] = 0;  
}  
i = 0;  
}  
}
```

## **Future Enhancements**

- Add AI-based voice processing for better recognition.
- Integrate with home security (CCTV, door locks).
- Develop a custom mobile app for hybrid control.

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**Thank you**